What is claimed is:

1. A method for bidirectional optical signal transmission through an optical fiber having a principal axis, the method comprising:

providing an optical detector in optical communication with an end of the optical fiber, the optical detector being configured to receive an optical signal from the end of the optical fiber and defining an optical element, the optical element being located at least partially within a radius of the end and configured to receive and direct an optical energy; and

directing the optical energy onto the optical element and toward the end of the optical fiber substantially parallel with the principal axis of the optical fiber.

2. The method of Claim 1, wherein providing an optical detector includes providing an optical detector engaged with an end of the optical fiber.

3. The method of Claim 1, wherein providing an optical detector defining an optical element includes providing an optical detector defining an optical port disposed therethrough.

4. The method of Claim 1, wherein directing the optical energy onto the optical element includes directing a laser beam onto the optical element.

5. The method of Claim 1, wherein providing an optical detector defining an optical element includes providing an optical detector defining an optical port disposed therethrough, and wherein directing the optical energy onto the optical element includes directing the optical energy through the optical port.

6. The method of Claim 1, wherein providing an optical detector defining an optical element includes providing an optical detector defining a mirror disposed on a surface of the optical detector.

7. The method of Claim 1, wherein providing an optical detector in optical communication with an end of the optical fiber and defining an optical element includes providing an optical detector in communication with the end defining a mirror disposed on a

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surface of the optical detector, and wherein directing the optical energy onto the optical element includes directing the optical energy away from the center of the optical fiber onto the mirror.

8. The method of Claim 1, wherein providing an optical detector in optical communication with an end of the optical fiber and defining an optical element includes providing an optical detector spaced apart from an end of the optical fiber and defining a mirror disposed on a surface of the optical detector, and wherein directing the optical energy onto the optical element includes directing the optical energy onto the mirror.

9. The method of Claim 1, wherein providing an optical detector defining an optical element includes providing an optical detector defining an optical element disposed at an intersection of the principal axis with the detector.

10. The method of Claim 1, wherein the detector defines the optical element, such that the principal axis does not intersect the optical element.

11. The method of Claim 1, wherein the optical element includes at least one of a diffraction grating, a Brewster plate, an etalon, a prism, and a lens.

12. An optical component, comprising:

a detector adapted to be positioned in optical communication with an end of an optical fiber and configured to receive an optical signal from the optical fiber and to generate an electronic signal responsive to the optical signal, the detector defining an optical element positionable at least partially within a radius of the end of the optical fiber, the optical element being configured to receive and direct an optical energy toward the end of the optical fiber.

13. The component of Claim 12, wherein the detector defines the optical element at an intersection of the principal axis with the detector.

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14. The component of Claim 12, wherein the detector is further adapted to communicate optically with the end of the optical fiber.

15. The component of Claim 12, wherein the optical element comprises an optical port disposed through the detector.

16. The component of Claim 12, wherein the optical element is configured to receive and direct a laser beam toward the end of the optical fiber.

17. The component of Claim 12, wherein the optical element includes a mirror disposed on a surface of the optical detector.

18. The component of Claim 12, wherein the detector is adapted to be engaged with an end of the optical fiber, and wherein the optical element includes a mirror disposed on a surface of the optical detector.

19. The component of Claim 12, wherein the detector is adapted to be spaced apart from an end of the optical fiber and wherein the optical element includes a mirror disposed on a surface of the optical detector.

20. The component of Claim 12, wherein the optical element includes at least one of a mirror, a diffraction grating, a Brewster plate, an etalon, a prism, and a lens.

21. The component of Claim 12, further comprising a transmitter operatively positioned proximate the detector and adapted to transmit the optical energy onto the optical element.

22. The component of Claim 21, wherein the transmitter includes a laser.

23. A fiber optic system for bidirectional optical signal transmission, comprising:

an optical fiber including at least one end, the end having a radius through which light passes and a principal axis;

a detector adapted to be positioned at least proximate to the end of the optical fiber and configured to receive an optical signal from the optical fiber and to

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generate an electronic signal responsive to the optical signal, the detector defining an optical element positionable at least partially within a radius of the end of the optical fiber, the optical element being configured to receive and direct an optical energy toward the end of the optical fiber; and

a transmitter operatively positioned proximate the detector and adapted to transmit the optical energy onto the optical element.

24. The system of Claim 23, wherein the detector defines the optical element at an intersection of the principal axis with the detector.

25. The system of Claim 23, wherein the detector is further adapted to be engaged into contact with the end of the optical fiber.

26. The system of Claim 23, wherein the optical element comprises an optical port disposed through the detector.

27. The system of Claim 23, wherein the optical element is configured to receive and direct a laser beam toward the end of the optical fiber.

28. The system of Claim 23, wherein the optical element includes a mirror disposed on a surface of the optical detector.

29. The system of Claim 23, wherein the detector is adapted to be engaged proximal to the optical fiber and wherein the optical element includes a mirror disposed on a surface of the optical detector.

30. The system of Claim 23, wherein the detector is adapted to be spaced apart from an end of the optical fiber and wherein the optical element includes a mirror disposed on a surface of the optical detector.

31. The system of Claim 23, wherein the optical element includes at least one of a diffraction grating, a Brewster plate, an etalon, a prism, and a lens.

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32. The system of Claim 23, wherein the transmitter includes a laser.

33. An aerospace vehicle, comprising:

a fuselage;

a propulsion system operatively coupled to the fuselage; and

an optical system operatively disposed at least partially within the fuselage, the optical system comprising:

an optical fiber including at least one end, the end having a radius and a principal axis;

a detector adapted to be positioned at least proximate to the end of the optical fiber and configured to receive an optical signal from the optical fiber and to generate an electronic signal responsive to the optical signal, the detector defining an optical element positionable at least partially within a radius of the end of the optical fiber, the optical element being configured to receive and direct an optical energy toward the end of the optical fiber; and

a transmitter operatively positioned proximate the detector and adapted to transmit the optical energy onto the optical element.

34. The vehicle of Claim 33, wherein the detector defines the optical element at an intersection of the principal axis with the detector.

35. The vehicle of Claim 33, wherein the detector is further adapted to be proximal to the end of the optical fiber.

36. The vehicle of Claim 33, wherein the optical element comprises an optical port disposed through the detector.

37. The vehicle of Claim 33, wherein the detector is adapted to be proximal to the end of the optical fiber and wherein the optical element includes a mirror disposed on a surface of the optical detector.

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38. The vehicle of Claim 33, wherein the detector is adapted to be spaced apart from an end of the optical fiber and wherein the optical element includes a mirror disposed on a surface of the optical detector.

39. The vehicle of Claim 33, wherein the optical element includes at least one of a mirror, a diffraction grating, a Brewster plate, an etalon, a prism, and a lens.

40. The vehicle of Claim 33, wherein the transmitter includes a laser.

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